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This study involves an investigation of socioeconomic status and its relationship to vocabulary achievement, reading comprehension, arithmetic skill, problem solving, and a composite of these variables. The population studies consisted of 223 third grade children from Western Pennsylvania. An interview sheet was constructed to measure socioeconomic status, and home visitations were utilized to check student responses on the sheet. Several tests of reading and mental ability were administered, and intercorrelations were computed between the stated variables, sex, and socioeconomic status. Correlations were positive in all areas, strengthening the accumulative evidence that socioeconomic status affects school achievement. Children from lower socioeconomic areas do not overcome this cultural deficiency by the third grade. It appears evident that all scholastic achievement areas reported in this study are affected by socioeconomic factors. Tables of statistical analyses are included. (Author/CJ)

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Socioeconomic Status and School Achievement

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SOCIOECONOMIC STATUS AND ITS RELATIONSHIP TO SCHOOL ACHIEVEMENT IN THE ELEMENTARY SCHOOL

The relationship of socioeconomic status and school achievement has been the subject of recurrent research during the past fifty years. Earlier investigations dealt with relationships between home conditions and dropouts, retardation and persistence in school. Those of Neighbours (1910) and Van Denburg (1941) showed a definite relationship between socioeconomic conditions and progress in school.

Gaugh (1946) found positive relationships between socioeconomic levels and vocabulary, arithmetic, reading ability, language ability, health and personality adjustment.

Davis (1943) contends the effect of social class on personality and behavior is what sets the concepts of goals. These goals of the lower socioeconomic system are different from the middle and upper group goals. The lower class usually has its incitement to learn crippled by the lack of available rewards.

Coleman (1940) who worked with 4,800 junior high subjects found the higher socioeconomic groups made the highest achievement on all group areas tested. Using the median to show differences in achievement were Collins and Douglas (1937), Long (1935), and Smith and Penny (1959).

Bryan (1941), Chauncey (1929), and Cuff (1933) used correlation ratios between their achievement measures and the Sim's Score Card. These people all found positive correlation. Heilman (1928) reported negative relationships between the socioeconomic and achievement factors.

Mayer's study (1961) showed the wealthiest suburban school outside of a typical American metropolitan area usually shows an average I.Q. of about 120 while the bottom school of the worst slum area shows an average I.Q. of about 85. Mayer explains that children with high I.Q.'s (135 and above) came from homes where the father was a professional, semiprofessional, or in business management. In the same report it was noted that only 7% of the students with high I.Q.'s came from homes of semiskilled and unskilled workers.

Metfessel (1964) found culturally disadvantaged children frequently are crippled in language development because they do not perceive the concept that objects have names, and that the same objects may have different names. The impoverished economic conditions under which these pupils are reared, with a scarcity of objects of all types, and the absence of discussion which characterizes communication in the substandard home, prejudice against the development of labels and of the concept of a specific name (or names) for everything.

Havighurst (1964) noted characteristics of an <u>elaborated language</u> environment include: Accurate grammatical order and syntax regulate what is said, discriminative selection from a range of adjectives and adverbs, and expressive symbolism discriminating between meaning with speech sequences rather than reinforcing dominant words or phrases.

The child who has experience with an elaborate language at home has a relatively easy time in school--he must simply go on developing the kind of language and related thinking he has already started.

A child who has learned a restricted language at home is likely to have difficulty in school, where an elaborate language is used and taught by the teacher. The difficulty is likely to increase as he goes further in school, unless the child learns the elaborate language.

Havighurst noted these characteristics of populations similar to the study population:

1. They are at the bottom of the American society in terms of income.

2. They have a rural background, and there are many of them in rural areas.

3. They suffer from social and economic discrimination at the hands of the majority of society.

4. They are widely distributed in the United States; while most visible in big cities, they are present in all except the very high income groups.

5. In racial and ethnic terms, these groups are about evenly divided between whites and nonwhites. They consist mainly of the following: Negroes from the rural South recently migrated to the northern industrial cities; whites from the rural South and the southern mountains who have migrated recently to the northern industrial cities; Mexicans with a rural background who have migrated into the West and Middle West; and European immigrants with a rural background, from eastern and southern Europe.

This study involves an investigation of socioeconomic status and its relationship to vocabulary achievement, reading comprehension, arithmetic skill, problem solving and a composite of these variables. It also investigated the particular phases of reading test scores and socio-economic status.

The population studied was that of 223 third grade children from Western Pennsylvania. The group was the totel third grade population of nine classrooms and three schools, representing two school districts in Western Pennsylvania.

An interview sheet was constructed to measure socioeconomic status. Meetings were held with the teachers involved and ground rules for use of the interview sheet were established. The interview sheet itself was pretested on a population of fifty post graduate students in education. Some thirty-five descriptive phrases were used to indicate socioeconomic status. In calculating the discriminative power the concept developed by Likert was used.

The completed interview sheet contained 19 items found to be most discriminating. One classroom of 32 students was used to determine the value of the sheet and to establish standard procedures. Home visitations followed to check student responses on the inverview sheet.

Intelligence, vocabulary achievement, reading comprehension, arithmetic skills, problem solving, a composition of these variables, and individual reading subtest area scores[1] were measured by use of the following tests: Otis Quick-Scoring Mental Ability Test, Iowa Tests of Basic Skills, and the Scott-Foresman Basic Reading Tests (1^2, 2^2, 3^2).

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[1] Seven Subtest Areas--Sentence Meaning, Sensory Imagery, Relationships, Emotional Reaction, Visual Scrutiny, Phonetic Analysis, and Structural Analysis.

Statistical Analysis and Interpretation of Results

Intercorrelations were computed between these measures: Sex, Socioeconomic Status, Reading Comprehension, Vocabulary, Arithmetic Skills, and Problem Solving.[2]

TABLE I

Intercorrelations Matrix Between Socioeconomic Status and Iowa Test of Basic Skills--Means and Standard Deviations for the Total Group

	1	2	3	4	5	6	M	SD
1. Sex		.167	.093	.148	.086	.018		
2. Socioeconomic Status	.167		.838	.902	.771	.772	35.883	7.680
3. Vocabulary	.093	.838		.772	.555	.553	35.050	9.604
4. Reading Comprehension	.148	.902	.772		.668	.659	35.428	9.691
5. Arithmetic Skill	.086	.771	.555	.668		.703	36.135	7.752
6. Problem Solving	.018	.772	.555	.659	.703		35.216	7.835

These correlations suggest that to a great extent, socioeconomic status was a factor in school achievement. The intelligence quotients for the groups involved in the study are listed in Table 2.

The means for the status groups for the Iowa Test of Basic Skills are indicated in Table 3. The test was given in the eighth month of the third grade. Therefore, 3.80 would be the expected norm.

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[2] Based on the 7070 I.B.M. Scores. Sponsored by the National Science Foundation. The analyses for this study were obtained through the use of the Computation and Data Processing Center of the University of Pittsburgh, provided through the support of the National Science Foundation.

TABLE II

I. Q. Scores
Based on Otis Beta--EM Test Results

Socioeconomic Status	Q_3	Median	Q_1
Low	111.2	99.5	88.5
High-Middle	113.2	105.0	92.7

TABLE III

Means and Standard Deviation for Total Group Scores on Iowa Test of Basic Skills: Total Group (N=223); High Socioeconomic Status (N=49); Middle Socioeconomic Status (N=73); and for Low Socioeconomic Status (N=101).

	High		Middle		Low	
	M	SD	M	SD	M	SD
Vocabulary	3.81	.12	3.69	.32	3.02	.25
Reading Comprehension	3.89	.10	3.69	.10	3.02	.11
Arithmetic Skills	3.87	.11	3.69	.73	3.28	.69
Problem Solving	4.02	.23	3.51	.16	3.18	.35

The means obtained indicate the children from the high socioeconomic group by grade three are eight months ahead of the children from the low group in the area of vocabulary achievement. In reading comprehension achievement the range between the groups is equivalent to a full school term or nine months. A full six months difference is evidenced between the high and low groups in arithmetic skills. Problem solving, which to a great degree is thinking ability, shows an eleven-month difference between the high and low groups. In total scores the high socioeconomic group with a mean score of 3.9 was seven months advanced over the 3.2 mean score of the low socioeconomic group.

Individual Reading Subtests

The individual areas of reading when related to socioeconomic status showed sixty-two out of sixty-four subtest areas favoring children from the high socioeconomic group. The scores for the children on a standard reading text test series were recorded for their second semester tests in grades one through three. In Tables 4, 5, 6 and 7, the mean scores for each of the seven subtest areas of the Scott-Foresman Tests will be listed along with total scores for each testing level. These four relationships tables show the results of the "t" tests used to test the null hypothesis that the means of test scores for the high socioeconomic group are equal to the means of the test scores for the low socioeconomic group.

Relationship Tables

(Where $\int \bar{H}$ o $\bar{X}_{high} = \bar{X}_{low}$)

These tables indicate if the H o is tenable or rejected. A large "X" in the appropriate column indicates either rejection or acceptance for each of the areas tested. The indication of "significant at the 5% level" is listed on each Table.

TABLE IV

Mean Scores - for Test 1[2]

	Individual		Sub-Test Areas--Scott-Foresman Test					
Socioeconomic Level	1	2	3	4	5	6	7	Total
High	5.60	9.60	7.20	7.10	7.40	5.80	6.70	47.90
Low	4.94	6.94	7.33*	7.66*	6.77	4.05	4.61	32.11
H∫o Rejected		X				X	X	X
H∫o Tenable	X		X	X	X			
Significant at 5% Level	No	Yes	No	No	No	Yes	Yes	Yes

* The low socioeconomic group had higher mean scores in areas 3 and 4 than the high socioeconomic group. However, the "t" test showed these differences in means not be significantly different.

TABLE V

Mean Scores - for Test 3^2

$H_o' \bar{X}_{high} = \bar{X}_{low}$

Socioeconomic Level	Individual		Sub-Test Areas--Scott-Foresman Test					
	1	2	3	4	5	6	7	Total
High	7.00	6.80	6.20	6.05	6.50	5.20	7.85	44.50
Low	5.55	6.44	5.11	5.66	6.44	3.27	7.22	40.22
H_o Rejected	X					X		
H_o Tenable	X	X	X	X	X		X	X
Significant at 5% Level	Yes	No	No	No	No	Yes	No	No

TABLE VI

Mean Scores for Total of Tests 1^2, 2^2, and 3^2

$H_o \bar{X}_{high} = \bar{X}_{low}$

Socioeconomic Level	Individual		Sub-Test Areas--Scott-Foresman Test					
	1	2	3	4	5	6	7	Total
High	7.23	8.53	6.20	7.47	7.27	5.30	7.27	48.36
Low	5.24	6.96	5.87	6.74	6.98	4.20	6.77	40.26
H_o Rejected	X	X		X		X		X
H_o Tenable			X		X		X	
Significant at 5%	Yes	Yes	No	Yes	No	Yes	No	Yes

It should be noted that in all but two cases out of sixty-four cases listed the mean scores of the high socioeconomic group are above those of the low socioeconomic group. In sixteen of the thirty-two areas the mean difference was statistically significant.

Factors such as the community, the socioeconomic level, the particular school, the intelligence of the students, and the personality and methods of the teachers are factors that influence to a significant degree reading gains, therefore, an additional effort was made to maintain a balance in all areas, except the personal socioeconomic level. The I.Q's (Table 2) were balanced, and the schools used had men in leadership positions with similar patterns of "running" a school. The schools were located in similar type areas, although they were about fifty miles from each other. The relationship to socioeconomic status and the Scott-Foresman Basic Text reading scores follow:

$r=.63$ (Total score to socioeconomic level on 1^2)

$r=.45$ (Total score to socioeconomic level on 2^2)

$r=.23$ (Total score to socioeconomic level on 3^2)

In the individual reading tests the socioeconomic factor is a positive factor by third grade, but not as significant as it is at the first grade level.

Correlations here indicate that out of the seven areas (Sentence Meaning, Sensory Imagery, Relationships, Emotional Reaction, Visual Scrutiny, Phonetic Analysis, and Structural Analysis) on the Scott-Foresman Test, Sensory Imagery and Phonetic Analysis showed the highest relationship to socioeconomic status. Following are the correlation coefficient tables showing these relationships.

TABLE VII

Scott, Foresman Test 1[2]
Correlation Coefficient Between Economic Level and Subtests

Areas	Sentence Meaning	Sensory	Relation-ship	Emotional Reaction	Visual	Phonetic Analysis	Structural Analysis
	1	2	3	4	5	6	7
r =	.28	.48	.47	.22	.36	.50	.35

TABLE VIII

Scott, Foresman Test 2[2]
Correlation Coefficient Between Economic Level and Subtests

Areas	1	2	3	4	5	6	7
r =	.46	.52	.45	.10	.11	.63	.22

TABLE IX

Scott, Foresman Test 3[2]
Correlation Coefficient Between Economic Level and Subtests

Areas	1	2	3	4	5	6	7
r =	.37	.54	.38	.51	.47	.58	.10

The results of Part One, dealing with the relationship of socio-economic levels and achievement as measured by the Iowa Test of Basic Skills indicate a high correlation exist. That section (see Table 1) also shows a high correlation between reading comprehension and vocabulary.

Part Two, concerned mainly with an individual breakdown of reading, showed positive correlations in each if the seven areas on the Scott-Foresman Basic Text tests.

Interestingly enough, the evidence from the data analyzed showed the low socioeconomic group to have lower percentages of students at or above the fiftieth percentile levels in 5 of the 7 test areas on test 3^2 than on test 1^2. On the other hand the high group showed only two areas where the 3^2 tests were not up to the level of the 1^2 test results.

In one area (relationship) the low group showed 44 percent at or above the fiftieth percentile level for test 3^2, whereas, the high group showed only 43 percent at this point or above.

The results of the study strengthen the accumulative evidence that socioeconomic status effects school achievement. Children from lower socioeconomic areas do not by third grade overcome this cultural deficiency. It seems evident all scholastic achievement areas reported in this study are affected by socioeconomic factors.

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